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the treatment of continuously ordered series, with the emphasis placed on such types as possess an " n -dimensional framework" is noteworthy. It will stimulate better students to reflect on the significance, for any analysis based on a continuously ordered number system, of the presence or absence in that system of segments which are "denumerably framed." The relation of the classical analysis and function theory, which repose ultimately on the system of real numbers, to the distinctive presence in that system of denumerable dense sub-classes will be suggested; a relation responsible for all properties dependent upon the Generalized Heine-Borel Theorem for instance. For a similar situation outside of order theory, the student may consult Hausdorff's fascinating chapters on the "topological" (including the metric) geometries of general classes (Mengen) in his *Grundzüge der Mengenlehre*.

The first edition of the book under review appeared in 1905 as a reprint from two of the author's papers in the *Annals of Mathematics*. In the present edition (1917) the changes made include only a few modifications and additions. The account given of Hartog's paper is of course new. See Discussions, page 345, of this issue.

LESTER S. HILL.

PROBLEMS FOR SOLUTION.

SEND ALL COMMUNICATIONS ABOUT PROBLEMS TO B. F. FINKEL, Springfield, Mo.

ALGEBRA.

485. Proposed by J. WALSH, Madison, Wisconsin.

Is it true that to every convergent series of positive terms, $a_1 + a_2 + a_3 + \dots$, there corresponds a series of the type

$$\frac{M}{1^p} + \frac{M}{2^p} + \frac{M}{3^p} + \dots, \quad \text{such that} \quad \frac{M}{k^p} > a_k, \quad p > 1?$$

486. Proposed by FLORENCE P. LEWIS, Goucher College, Baltimore, Md.

Find the condition which must be satisfied by the coefficients of the quartic,

$$a_0x^4 + a_1x^3 + a_2x^2 + a_3x + a_4 = 0$$

in order that the equation may be solvable by successive applications of the quadratic formula.

GEOMETRY.

518. Proposed by ROGER A. JOHNSON, Cleveland, Ohio.

If one angle of a triangle is 60° , the Euler line (the line through the circumcenter, orthocenter, and median point) is perpendicular to the bisector of that angle; and if one angle is 120° , the Euler line is parallel to the bisector of that angle.

519. Proposed by OTTO DUNKEL, Washington University.

Given the conjugate axes $A'O A$ and $B'O B$ of an ellipse, points of the curve may be constructed as follows: Drop the perpendicular BM' to OA and produce it to N' so that $BN' = AO$. Draw a straight line through O and N' . Upon a straight edge, say that of a slip of paper, the points N , M and P are marked so that $NM = N'M'$ and $MP = M'B$. Place the straight edge so that N falls on ON' and M on OM' and mark the position of P . This gives a point of the ellipse and by sliding the straight edge into new positions other points may be rapidly obtained. If the axes are perpendicular this gives the familiar trammel construction. Prove the correctness of this construction.

